

ABSTRACT

By using a gas diffusion layer for a fuel cell comprising a fabric comprising a warp thread and a weft thread which are made of carbon fiber, wherein the distance X between adjacent intersections where the warp and weft threads cross each other and the thickness Y of the fabric satisfy the equation: $1.4 \leq X/Y \leq 3.5$, the present invention reduces the surface asperities of the substrate and prevents a micro short-circuit resulting from the piercing of the polymer electrolyte membrane of the fuel cell by the carbon fibers of the fabric so as to improve the characteristics of the fuel cell.

In order to further prevent the piercing of the polymer electrolyte membrane by the carbon fibers of the gas diffusion layer substrate, the rough surface of the carbon fabric is smoothed by: (1) applying a clamping pressure of 1 to 20 kgf/cm² to the contact area between each electrode and each conductive separator plate of the fuel cell; or (2) heating the gas diffusion layer surface before the gas diffusion layer is disposed onto the polymer electrolyte membrane.